

The Water Cycle Game

Overview:

Students play a game modelling the path that water takes through Earth: from the soil to rivers and lakes to clouds to the ocean and so on.

Objectives:

The student will:

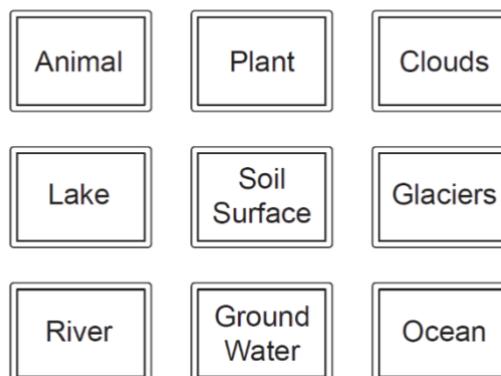
- play the water cycle game;
- chart the path water takes through Earth; and
- list processes by which water moves from one location to another.

Curriculum links:

- Demonstrate an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- Demonstrate an understanding of geochemical cycles by describing the water cycle to show that water circulates through the crust, oceans, and atmosphere of Earth.

Materials:

DESK CONFIGURATION



9 six-sided dice

Activity Preparation:

Arrange desks or tables in the classroom as shown in the diagram, alternatively outdoor spaces can be used to represent these stations and create more movement. Place one of the STUDENT INFORMATION SHEETS and a die on each desk. (NOTE: Alternatively, students can be assigned to draw an illustration for each of the stations.)





Activity Procedure:

1. Explain that students will play a game; they will role-play water as it moves throughout Earth. Ask students where water exists on Earth and how it gets there. Display image of Water Cycle.
2. Distribute the STUDENT WORKSHEET: "Water Cycle Game." Divide students into pairs, pairing an older student with a younger student if possible. Divide pairs evenly among the stations.
3. Explain that when the signal is given, students will roll the die at the station. If more than one student is at a station, students will need to take turns rolling the die. Students should read the number on the die and match it to the chart on the sheet on the table. The chart will indicate where to go next. For example, if a student rolls a 3 at the Soil Surface Station, he or she will move to the Ground Water station next.
4. As students move from station to station, they should chart their paths on their STUDENT WORKSHEETS.
5. At the next station, the student should roll the die and move according to the chart at the new station. Each station will have a different chart.
6. Sometimes the chart will indicate that a student should stay at that station. In that case, the student should mark an X on that location on his or her chart and roll again. By the end of the game, a student may have several X's next to a particular station. At the end of the game, students will share paths with each other.
7. Play a mock round to make sure students understand the rules.
8. Indicate that students should begin and assist as necessary. Allow students to play for 10-15 minutes. (NOTE: Level I students may require more play time.)
9. Draw a replica of the blank STUDENT WORKSHEET: "Water Cycle Game" on the board or use the OVERHEAD: "Water Cycle." Invite students to share the path they took. Compare students' paths.
10. If needed, introduce the term "water cycle." Explain that a cycle is something that repeats over and over. For example, the year is a cycle. The twelve months of the year repeat over and over every year. Water moves on Earth in a cycle as well. Even though water moves in a variety of ways, it always returns to its original position.
11. Ask students to answer the following questions based on the paths that were taken during the water cycle game. List student ideas on the board and discuss as a class.
 - A. Where can water from a plant go?
 - B. How does water get to a river?
 - C. Where can water go from a glacier?
 - D. How does water get to a cloud?

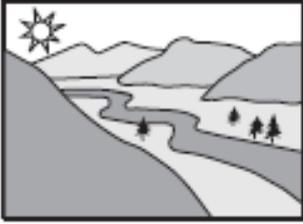
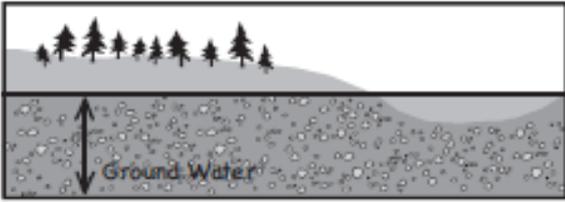
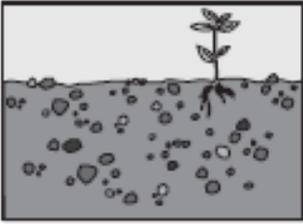
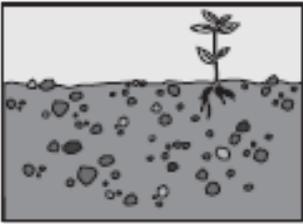
Critical Thinking Concept: Think-Pair-Share Method. Divide students into pairs or small groups. Assign each group a station. Ask groups to list ways that water is carried or moves from that station to the other stations. Remind students that water does not go to every station, just the ones that are on the chart. For example, water moves from a river to an animal when the animal drinks the water. Ask students to share ideas with the class.

Answers will vary, however, students should only illustrate paths that are allowed within the rules of the game.

Teacher Information Sheet

Location	Moves To	Process of Movement
Soil Surface	Plant	The roots of plants absorb water.
	River	Water runs off the soil into a river.
	Ground Water	Water is filtered through the soil to the ground water.
	Clouds	Water is heated until it evaporates and forms clouds.
	Soil Surface	Water stays on the surface of the soil.
Plant	Clouds	Water leaves the plant in the form of water vapor through transpiration and forms clouds.
	Plant	The plant uses water.
River	Lake	Water flows from a river to a lake.
	Ground Water	Water is filtered through the soil to the ground water.
	Ocean	Water flows from a river to the ocean.
	Animal	An animal drinks the water.
	Clouds	Water is heated until it evaporates and forms clouds.
	River	Water remains in the current of the river.
Clouds	Soil Surface	Water condenses, precipitates, and falls onto the soil.
	Glacier	Water falls as snow onto a glacier and becomes part of the glacier.
	Lake	Water condenses, precipitates, and falls into a lake.
	Ocean	Water condenses, precipitates, and falls into the ocean.
	Clouds	Water remains as a water droplet within a cloud.
	River	Water condenses, precipitates, and falls into a river.
Ocean	Clouds	Water is heated until it evaporates and forms clouds.
	Ocean	Water remains in the ocean.
Lake	Ground Water	Water is filtered through the soil to the ground water.
	Animal	An animal drinks the water.
	River	Water flows into a river from the lake.
	Clouds	Water is heated until it evaporates and forms clouds.
	Lake	Water remains in the lake.
Animal	Soil Surface	Animals excrete water through urine and feces onto the soil.
	Clouds	Water is emitted by animals through respiration and evaporation and rises to form clouds.
	Animal	Animals use water.
Ground Water	River	Water filters through the soil to a river.
	Lake	Water filters through the soil to a lake.
	Ground Water	Water stays underground.
Glacier	Ground Water	Ice melts and the water filters underground.
	Clouds	Ice evaporates through the process of sublimation. The water vapor forms clouds.
	River	Ice melts and flows into a river.
	Glacier	Ice remains in the glacier.

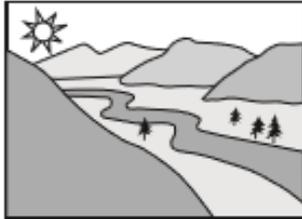
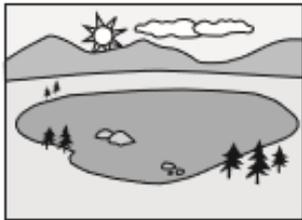
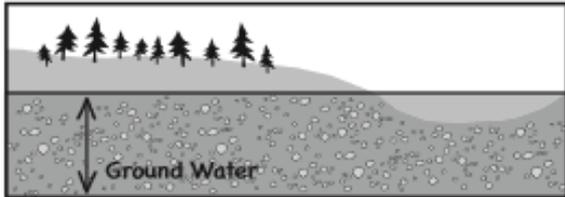
Soil Surface

<p>1</p> 	<p>Plant</p> 
<p>2</p> 	<p>River</p> 
<p>3</p> 	<p>Ground Water</p> 
<p>4</p> 	<p>Clouds</p> 
<p>5</p> 	<p>Soil Surface</p> 
<p>6</p> 	<p>Soil Surface</p> 

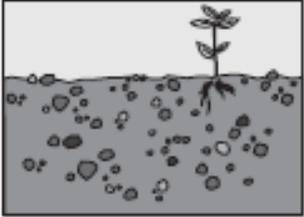
Plant

1		Clouds	
2		Clouds	
3		Clouds	
4		Clouds	
5		Plant	
6		Plant	

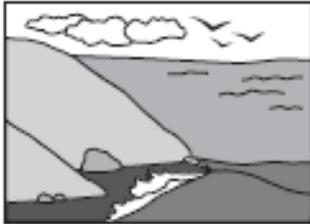
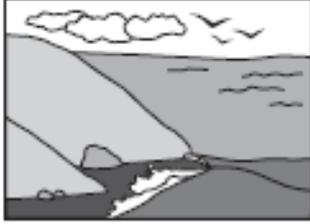
River

1		Clouds	
2		River	
3		Lake	
4		Ground Water	
5		Ocean	
6		Animal	

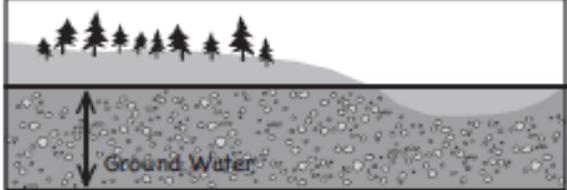
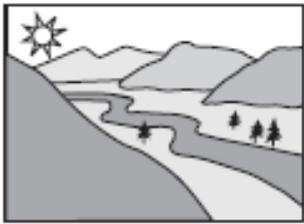
Clouds

1		Clouds	
2		Glacier	
3		Lake	
4		Soil Surface	
5		Ocean	
6		River	

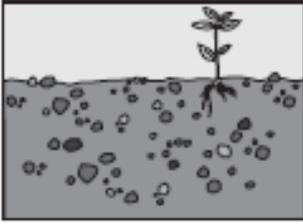
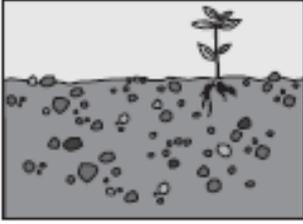
Ocean

1		Clouds	
2		Clouds	
3		Ocean	
4		Ocean	
5		Ocean	
6		Ocean	

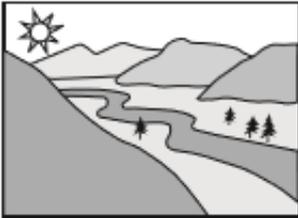
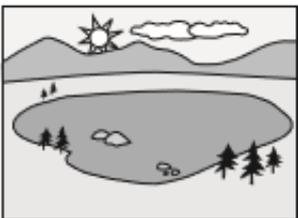
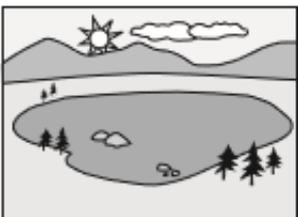
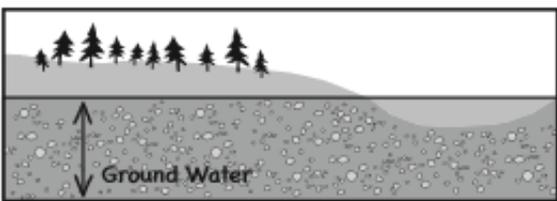
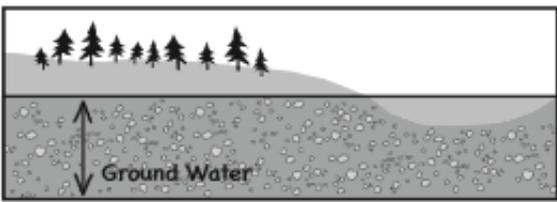
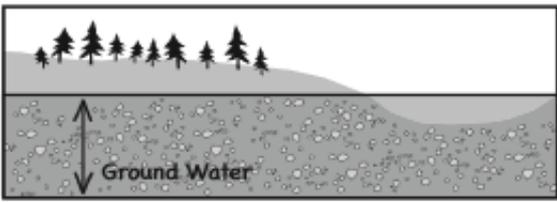
Lake

1		Ground Water	
2		Clouds	
3		Animal	
4		River	
5		Lake	
6		Lake	

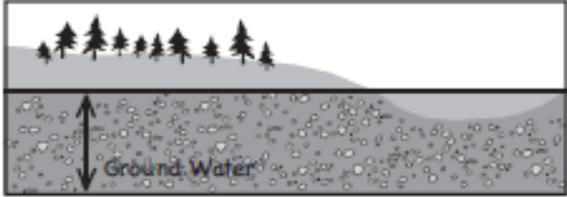
Animal

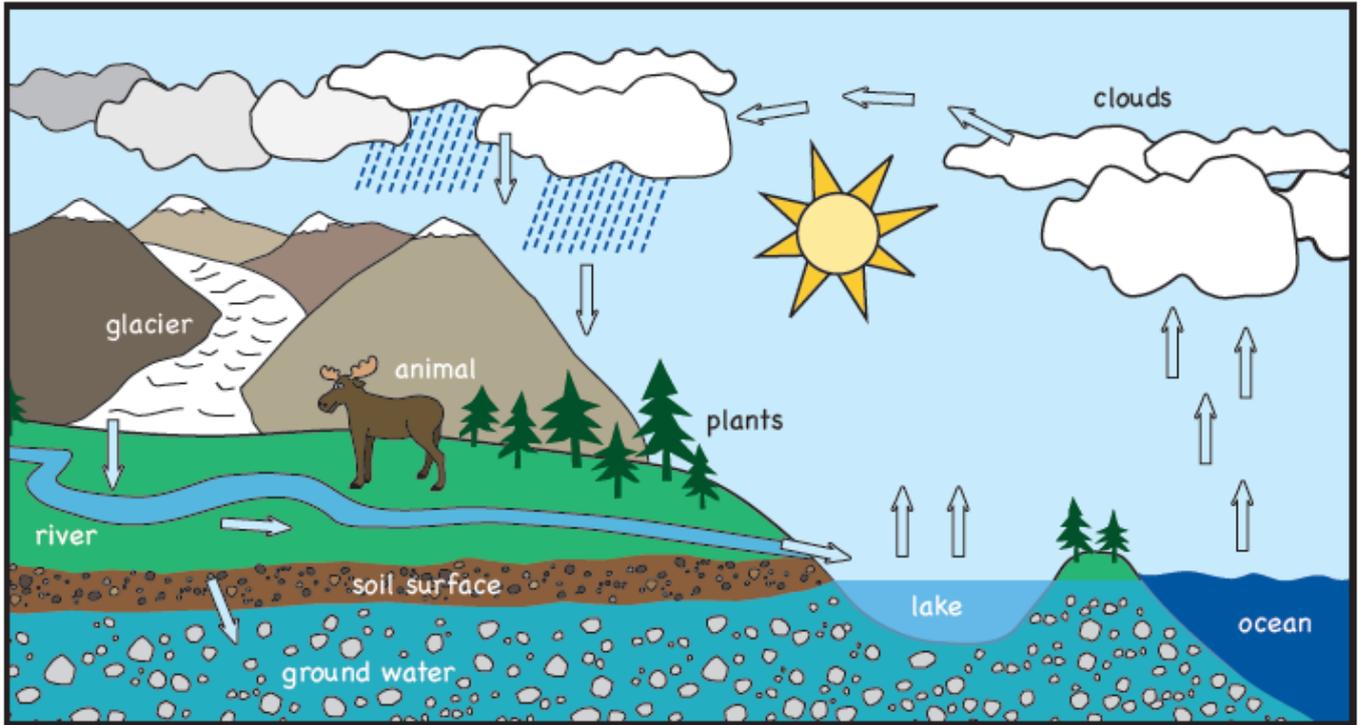
1		Clouds	
2		Clouds	
3		Clouds	
4		Animal	
5		Soil Surface	
6		Soil Surface	

Ground Water

1	River	
2	Lake	
3	Lake	
4	Ground Water	
5	Ground Water	
6	Ground Water	

Glacier

1		Glacier	
2		Glacier	
3		Glacier	
4		Ground Water	
5		Clouds	
6		River	



Directions: Chart the Path you take during the game using the information on the picture above: